Exercise 2: E-commerce Platform Search Function:

package cognizantdeepskilling;

import java.util.Arrays;

import java.util.Comparator;

class Product {

int productId;

String productName;

String category;

public Product(int productId, String productName, String category) {

this.productId = productId;

this.productName = productName;

this.category = category;

}

public String toString() {

return "[" + productId + "] " + productName + " - " + category;

}

}

class SearchUtils {

public static Product linearSearch(Product[] products, String name) {

for (Product product : products) {

if (product.productName.equalsIgnoreCase(name)) {

return product;

}

}

return null;

}

public static Product binarySearch(Product[] products, String name) {

int left = 0, right = products.length - 1;

while (left <= right) {

int mid = (left + right) / 2;

int cmp = name.compareToIgnoreCase(products[mid].productName);

if (cmp == 0) {

return products[mid];

} else if (cmp < 0) {

right = mid - 1;

} else {

left = mid + 1;

}

}

return null;

}

}

public class Main {

public static void main(String[] args) {

Product[] products = {

new Product(101, "Shoes", "Footwear"),

new Product(102, "Laptop", "Electronics"),

new Product(103, "Chair", "Furniture"),

new Product(104, "Mobile", "Electronics"),

new Product(105, "Watch", "Accessories")

};

System.***out***.println("Linear Search:");

Product result1 = SearchUtils.*linearSearch*(products, "Mobile");

System.***out***.println(result1 != null ? result1 : "Product not found");

Arrays.*sort*(products, Comparator.*comparing*(p -> p.productName.toLowerCase()));

System.***out***.println("\n Binary Search:");

Product result2 = SearchUtils.*binarySearch*(products, "Mobile");

System.***out***.println(result2 != null ? result2 : "Product not found");

}

}